

## Specification

NOSE MASK

## Technical Field

A nose mask according to this invention relates to a nose mask whose user inserts a mask portion of an arrangement axle from nares into a nasal vestibule (vestibulum nasi), so that a nasal septum is sandwiched by the arrangement axle, whereby the mask portion is fitted in a nasal cavity. The invention is for providing a nose mask, applicable for various purposes including a filtering mask preventing from inhaling pollen, dust etc., a mask for a treatment tool by absorbing and evaporating a nose drug impregnated in a hygroscopic mask portion, and a nose stopper for swimming performance.

## Background of the Art

In conjunction with a mask fitted in the nares when it is in use, Japanese Patent Laid-open Nos. 8-71170, 9-294819, and 11-137702 are issued. Each of the masks published in these official gazettes is for inserting a filter into an entrance of nares or for covering the nares with the filter. These filters are filtering materials for passing through and purifying the air. As an arrangement tool for inserting the filter into the nares is engaged in the entrance of the nares or a head of the nose in each of the conventional nose masks, the nose swells by the filter being inserted into the nares. As the head of the nose is covered by an arrangement portion for arranging the filter to cover the nares, an appearance of the nose is further spoiled from an aesthetic point of view.

However, such a prior-art nose mask is originally for not only absorbing the polluted air, but also filtering the polluted air. The nose mask can be

used in such a multi-functional way as a nose treatment tool for pollinosis etc. or as a nose stopper for the swimming performance. Floating dust in the air has various kinds of pollen, polluted dust, malodor etc. The prior-art nose mask is engaged in the nares for preventing from the inhalation of the dust, and the mask portion must be fixed in the arrangement tool. To achieve this, the nose mask has been limited to only one kind. As a result, the prior-art nose mask cannot select the multi-functional nose mask respectively corresponding to floating dust, medical treatment, and swimming. Furthermore, there was a disadvantage on the mask fitted in a position near outside of holes of the nose, which is that the mask is easily released and even if the mask fits the nose, the mask spoils the appearance of the face as respective holes of the nose are widened.

#### Disclosure of the Invention

This invention is proposed as a new nose mask that several kinds of mask portions, each of which has a distinctive function, are selectively fitted on tips of an arrangement axle.

The product, nose mask, is engaged within the nares without spoiling the appearance of the nose even if the masks are engaged with a nasal cavity. The masks are separately manufactured in terms of their functions, such as a function to treat nose by preventing from inhaling pollen, malodor, dust etc. or a function to prevent from an invasion of water through swimming performance. This invention intends to provide a nose mask wearable in the nares by means of selecting either a mask portion or a mask stopper.

In order to solve the above-mentioned problems, a nose mask of the present invention comprises an arrangement axle and a mask portion

coupled with a tip of the arrangement axle. The mask portion with a distinctive function is arranged on the arrangement axle, and the arrangement axle is inserted from the nares into a nasal vestibule, so that a nasal septum is sandwiched by the arrangement axle in front of a nasal cavity. The tip of the arrangement axle is coupled with the mask portion by means of a cap and a stopper. The mask portion comprises a material selected from the group comprising a fiber with air permeability and hygroscopicity, and a rubber without liquid permeability.

Some of the materials have a minute mesh capable of filtrating the polluted air for impregnating infiltrative liquid. The materials of the mask portion include fiber, which is used for a medical treatment as preventing from inhaling the polluted air without spoiling the appearance of the nose, and a rubber having no water permeability for swimming.

The tip of the arrangement axle wearable in the nose by being inserted from the nares is provided with the arrangement portion consisting of the cap and the stopper, so that a cellulose sponge and filters can be alternately arranged. The cellulose sponge has a flat surface with a hole for engaging, a tip of the cap being inserted in the hole. Then, the filters also has a hole for engaging, the tip of the cap being inserted in the hole. The cellulose sponge and the filters can be alternately arranged and fixed by means of the stopper on the tip of the cap; the cap is arranged on the tip of the arrangement axle.

The arrangement axle is made of either synthetic resin or vegetable resin with a moderate elasticity. The mask portion fitted on the tip of the arrangement axle is made of a material with air permeability and hygroscopicity such as fiber and sponge. The material is sometimes made of either a soft synthetic resin or rubber, which can prevent from an

invasion of water. The function of the mask portion is different according to its material, and the kind of the mask is increased according to its aim. The mask portion fundamentally has a structure in which a cellulose sponge and filter layers comprising a minute mesh are alternately arranged and fitted by the cap and the stopper. Instead of the above-identified mask portion, the stopper made of silicone rubber may be used.

According to an aspect of this invention (Claim 1), there is provided with a nose mask characterized in that the arrangement axle is inserted from the nares into the nasal vestibule and that a plurality of mask portions are fitted on the tips of the arrangement axle which is to fit the mask portions to the nasal cavity. The mask portion has the sponge and the filter layers both fitted on the tip of the arrangement axle by the cap and the stopper, so as to be applicable for filtering polluted materials such as pollen, dust, malodor in the air and for treating a nose etc. Instead of said mask portion, a rubber stopper portion can be fixed on the tip of the arrangement axle selectively coupled with the cap and the stopper.

According to another aspect of this invention (Claim 2), there is provided with a structure in which a cellulose sponge and filters are alternately arranged on the mask portion and the mask portion is fitted on the tip of the arrangement axle. In this case, the cellulose sponge and the filter are alternately inserted in an axle with an axle hole in the center of the cap, with the stopper inserted into said axle. As the axle tip and the stopper are coupled and formed in the claw-shaped configuration, the cellulose sponge and the filter are fixed onto the axle of the cap. This invention is characterized in that as the tip of the arrangement axle is formed in the claw-shaped, the tip is coupled with a coupling portion fitted on the cap and the mask portion is fitted onto the arrangement axle. There is thus an

advantage in preventing the mask portion of the engagement axle from being released because of the claw-shaped configuration.

According to still another aspect of this invention (Claim 3), the stopper is inserted into said axle and the axle tip and the stopper are coupled and formed in the claw-shaped configuration, thereby the cellulose sponge and the filter are fixed to the axle of the cap. The present invention is characterized in that the tip of the arrangement axle is formed in the claw-shaped, the tip is coupled with the coupling portion fitted on the cap and the mask portion is fitted onto the arrangement axle. There is thus an advantage in preventing the mask portion of the engagement axle from being released because of the claw-shaped configuration.

According to yet another aspect of this invention (Claim 4), the mask portion is fitted on the tip of the arrangement axle, which is inserted from the nares to a nasal septum and fitted on the very inner part of a nasal cavity, where one mask portion selected from several mask portions can be fitted. For example, a nose stopper can be fitted on the tip of the arrangement axle instead of a nose mask. There are other masks which can be selectively used including; a nose mask for filtrating polluted substances such as pollen, dust, malodor etc. floating in the air; a nose mask for treating a nose; a nose stopper for the swimming performance; and a nose stopper made of silicone rubber.

According to further aspect of this invention (Claim 5), a nose stopper is provided on the tip of said arrangement axle. The feature is that the arrangement axle is inserted from the nares into the nasal vestibule so that the nasal septum is sandwiched by the arrangement axle, whereby it prevents from causing stimulus by the invasion of water.

### Brief Description of the Drawings

FIG. 1 is a sectional view showing a front of the nose mask.

FIG. 2 is a plan view of the mask portion.

FIG. 3 is a side view of the nose mask.

FIG. 4 is a sectional view depicting conditions of use of the nose mask from a side surface of face.

### Best Mode Embodiment for Carrying out the Invention

The technical idea of this invention is embodied in the embodiment described below.

Referring to FIG. 1, in a nose mask, to fit each mask portion on an arrangement portion of each tip of an arrangement axle (2), an axle (4c) is provided on a cap (4) with an axle hole in the center of the cap (4), a claw (4b) provided on a tip of the axle is engaged with a claw (3b) provided on a stopper (3), a claw (4a) provided on a center part of the cap is engaged with a claw (2a) of the tip of the arrangement axle (2), and the mask portion comprising a cellulose sponge (5) and filters (6) is fitted on the arrangement portion of the arrangement axle (2). As the cap (4) is engaged with the stopper (3) by their claws as well as the cap (4) and the arrangement axle (2), the cellulose sponge (5) and the filters (6) are configured not being released from the arrangement axle (2), which has the mask portions.

Braces (7) are formed on the arrangement axle (2). Referring to FIG. 4, the arrangement axle sandwiches a nasal septum (9) so that the mask portions are fitted in a nasal vestibule (10). The arrangement axle inserted into the nasal vestibule sandwiches the nasal septum (9) between the braces (7) without spoiling an appearance of nares, so that the mask portions are stabilized and the nose mask is not released and dropped by

such an internal pressure as sneezing. For the purpose of preventing an internal surface of a nasal cavity (11) from excessive stimulus, the materials of the cellulose sponge and the filters have flexibility. The arrangement axle is made of synthetic resin or vegetable resin with elasticity, and provided with the braces (7), which are inserted from the nares to sandwich the nasal septum by using their own shape for preventing from being easily dropped.

The mask portions, which are to be fitted on the tips of the arrangement axle, are not positioned in the very inner part of the nasal cavity. A nose stopper for the swimming performance, filter layers for filtering and purifying the air polluted by dust, pollen etc., and a cellulose sponge capable of infiltrating drug for a medical treatment are produced, and at least any two of three are fitted on the arrangement axle (2) by engaging the cap (4) with the stopper (3).

Preferably, the mask portions have, as well as the cellulose sponge does, air permeability and hygroscopicity not to over-stimulate an internal mucous membrane, and flexibility to properly fit an internal shape of the nasal cavity. An elastic body for the nose stopper to be fitted on the arrangement axle is represented by a rubber plate, which does not infiltrate water for the swimming performance. A rubber plate made of silicone rubber is preferable. For filtering the polluted air including malodor such as pollen, dust, smoke, and other rotten smells, and poisonous materials such as nitrogen oxide and dioxin, the filters preferably have a minute mesh capable of purifying the air, and is made of a minute fiber represented by paper, cotton, synthetic resin and vegetable resin, and capable of filtering the above-mentioned polluted air. Furthermore, there is a cellulose sponge, which has hygroscopicity and liquid permeability to absorb and impregnate

drug with an elastic body when the drug is dropped. Any of them is necessarily fitted on the arrangement axle.

The arrangement axle (2) is to be inserted not more than 15 mm from a naris (8) to sandwich and fix the nasal septum. Therefore, it is important to keep the length of the arrangement axle less than 15 mm for not stimulating the nasal cavity (11). This supports the mask portions not to be inserted to the very inner part of the nasal cavity. It is preferable that the mask portions are flexible elastic bodies hygroscopic for not stimulating the internal mucous membrane of a nose, and capable of keeping moist with dropped drug and air permeability. Instead of the mask portions, a rubber plate made of a material with no liquid permeability is sometimes fitted on the tip of the arrangement axle (2) by the cap and the stopper.

The mask portion is sometimes used as a treatment tool by which when liquid drug is dropped on the mask portion the liquid is impregnated with the elastic body, by fitted on the nose, to absorb the drug which is evaporated into the nasal cavity by body temperature and breath. In an embodiment, the elastic body of the mask portion is used as a filter for the polluted air, while in the other embodiment, used for medical treatment. An elastic body without liquid permeability for the water performance can be fitted on the arrangement axle in accordance with its function.

An embodiment will be described in detail referring to the drawings.

The embodiment represents an example of the present invention on the premise of enabling its user to selectively fit plural mask portions with distinctive functions on the arrangement axle, and also to carry the nose mask with them.

As a preferred embodiment, the nose mask of the present invention is characterized in that tips of a 15 mm arrangement axle are inserted from



nares (8) to sandwich a nasal septum (9) by using braces (7), and that the arrangement axle is carefully inserted in a nasal vestibule (10) not to insert mask portions fitted on the tips of the arrangement axle into the very inner part of a nasal cavity.

A claw (2a) is provided on the tip of the arrangement axle (2), and the tip of the arrangement axle (2) is inserted into an axle hole provided in the center of a cap (4). The claw (2a) is coupled with a claw (4a) and formed in the claw-shaped for securing the coupling. A claw (4b) is provided on a tip of a lower part of the cap (4) and coupled with a claw (3b) of a stopper (3) so as to fix the mask portion on the tip of the arrangement axle (2). A cellulose sponge (5) and filters (6) are alternately arranged on this mask portion according to a combination of several functions.

In a case where a nose mask is used as a nose stopper for the swimming performance, a rubber plate with no liquid permeability such as flexible rubber is fitted on the tip of the arrangement axle (2) by the cap (4) and the stopper (3). In a case where the nose mask is used as a filtering mask for the polluted air, it is preferable that filter layers and a cellulose sponge which are made of a minute mesh with air permeability and hygroscopicity are alternately arranged to filter and purify the polluted air absorbed from the nares. Furthermore, in a case of the nose mask for the medical treatment, a mask portion, which is made of fiber and has good liquid drug permeability, is fitted on the tip of the arrangement axle (2). This nose mask for the medical treatment is characterized in that when liquid drug is dropped on the mask portion, the drug is filtrated and impregnated.

The above-mentioned arrangement axle (2) is inserted from the nares, kept in the position by the braces (7), and thereby kept invisible from outside. Therefore, people around the nose-mask user will not notice the

use of the nose mask. The arrangement axle (2) made of either flexible synthetic resin or vegetable resin is inserted into a nasal vestibule (10), which, for example, is preferably positioned about 15 mm from the nares. Although the length of the arrangement axle to be inserted into the nares (8) varies from less to more than 15 mm, the length of the arrangement axle to be inserted into the nose must be adjusted in order not to cause stimulus.

### Industrial Applicability

An actual use of the embodiment will be explained below.

The nose mask is characterized in that distinctive mask portions can be fitted on the arrangement axle (2) according to a functionally different purpose of use including swimming, anti-pollinosis, and medical treatment such as stoppage of nose bleeding. For example, the nose mask to be used in a place where there are a lot of pollen and dust is configured that a mask portion of filter layers, which is suitable for purifying the air, is fitted on the tip of the arrangement axle (2). In the case of the nose stopper for the swimming performance, a rubber plate is fitted for a mask portion instead of the filters. In the case of the treatment nose mask for nose bleeding, a cellulose sponge on which liquid drug is dropped is used for a mask portion. The nose mask is characterized in that plural products are put into a container to be carried while in outside, so that the mask is used by fitting to a nose anytime need arises. In the nose mask of the present invention, the arrangement axle is inserted from nares into the nasal vestibule, and corresponding to various uses such as for swimming, filtering pollen, dust, and malodor in the air, and treating, various mask portions are prepared for the user to selectively use the nose mask.

The arrangement axle has the braces to sandwich the nasal septum when

the arrangement axle is inserted from the nares into the nasal vestibule. The length of the arrangement axle to be inserted is approximately 15 mm from the nares for not causing the problem that the mask is easily released by the inner pressure of sneezing, as the arrangement axle is not directly touched to an inner surface of mucous membrane of the nasal cavity so as not to cause sneezing by stimulus.

The nose mask is able to prevent a nose from running out by means of a mask portion with hygroscopicity. Some of the masks have mask portions which liquid selected from a group of remedy for pollinosis, nose drug for stopping nose bleeding, and a perfume for de-odorizing is dropped in advance. The drug or the perfume can be positioned in the nares and evaporated and absorbed so as to work effectively. The liquid impregnated in the mask portion is heated and evaporated by body temperature, and absorbed into the nasal cavity when breathing. The nose mask is also used as a sanitary tool for effective medical treatment.

The present invention provides the nose mask, which can be used in different cases including a case of going to a place with the polluted air, a case of medical treatment, and a case of the swimming performance, without spoiling an appearance of a nose.